

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V EXAMINATION – WINTER 2025****Subject Code:3152308****Date:02-12-2025****Subject Name:Plastics Testing-II****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		Marks
Q.1	(a) Define: HDT, Dielectric strength and VSP	03
	(b) Give ASTM standards for ESCR, Arc Resistance, VSP and Thermal conductivity.	04
	(c) Explain heat deflection temperature (HDT) test with neat diagram.	07
Q.2	(a) List various weathering tests and chemical tests for testing plastic materials.	03
	(b) Discuss Arc Resistance test for Plastic samples.	04
	(c) Explain non-destructive testing using ultrasonic (i) pulse echo (ii) transmission technique.	07
	OR	
	(c) Explain vicat softening temperature (VST) test procedure with neat diagram.	07
Q.3	(a) Write about: Dielectric constant.	03
	(b) Discuss thermal conductivity test procedure with neat diagram.	04
	(c) Explain test method to determine refractive index of polymers using refractometer with neat diagram.	07
	OR	
Q.3	(a) Define: Refractive Index, Luminous transmittance and Haze.	03
	(b) Explain flammability test for self supporting plastics in vertical position.	04
	(c) Explain test methods to determine dielectric strength in detail.	07
Q.4	(a) Explain Volume and Surface resistivity.	03
	(b) Explain test method to determine coefficient of thermal expansion.	04
	(c) Explain Environmental stress cracking resistance (ESCR) test.	07
	OR	
Q.4	(a) List the typical requirements of an insulator.	03
	(b) Discuss about Specular Gloss test to determine optical properties.	04
	(c) Explain accelerated weathering using exposure to fluorescent UV lamps test with neat diagram.	07
Q.5	(a) List the applications of Differential Scanning Calorimeter (DSC) and draw a typical DSC thermogram.	03
	(b) Discuss immersion test for chemical resistance properties.	04
	(c) Explain Oxygen transmission rate (OTR) test along with its applications.	07
	OR	
Q.5	(a) Give full name of: TGA, DMA, TMA	03
	(b) Explain Flammability test for Self supporting plastics in horizontal position.	04
	(c) Explain Gel Permeation Chromatography (GPC) to determine molecular weight distribution in plastics with neat diagram.	07
